

We claim:

1. A separating apparatus for use in a machine used for separating hard material from soft material, comprising:

a wall having an interior side and an exterior side; and

5 a plurality of apertures through the wall, each aperture comprising an outer section and an inner section, the outer section having a first opening and the inner section having a plurality of second openings, wherein the second openings open from the interior side to the first opening and the first opening opens to the exterior side.

10 2. The apparatus of claim 1 wherein the apparatus is a screen or sieve.

3. The apparatus of claim 1 wherein the apparatus is cylindrical in shape and further comprises two end portions.

15 4. The apparatus of claim 1 wherein the first opening is slot shaped, rectangular, square, oval or circular and the second opening is slot shaped, rectangular, square, oval or circular.

5. The apparatus of claim 1 wherein the apparatus is manufactured out of steel, ceramic or plastic.

20 6. The apparatus of claim 1 wherein the first openings are formed by milling, drilling, lasers, water jets or EDM and the second openings are formed by milling, drilling, lasers, water jets or EDM.

25 7. The apparatus of claim 1 wherein the second openings are substantially perpendicular relative to the interior side.

8. The apparatus of claim 1 wherein the second openings are at an acute angle relative to the interior side.

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9. A machine for separating hard material from soft material, comprising:

a conduit;

an inlet tube connected to the conduit for providing the conduit with hard and soft material;

5 a separating apparatus positioned at one end of the conduit, the apparatus comprising a wall having an interior side and an exterior side and a plurality of apertures through the wall, each aperture comprising an outer section and an inner section, the outer section having a first opening and the inner section having a plurality of second openings, wherein the second openings open from the interior side to the first opening and the first opening
10 opens to the exterior side; and

a device for moving the hard and soft material along the conduit from the inlet tube to the apparatus end of the conduit so that soft material and a controlled amount of hard material are forced through the apertures in the apparatus.

15 10. The machine of claim 9 further comprising a motor assembly for driving the device.

11. The machine of claim 10 wherein the material flows toward the motor assembly.

12. The machine of claim 10 wherein the material flows away from the motor assembly.

20 13. The machine of claim 9 further comprising a compression ring for controlling pressure in the conduit and allowing for the evacuation from the conduit of hard material.

14. The machine of claim 9 wherein the device is a rotating auger or a piston.

25 15. The machine of claim 9 wherein the apparatus is cylindrical in shape and further comprises two end portions.

16. The machine of claim 9 wherein the apparatus is a screen or a sieve.

17. A method for separating soft material from hard material, comprising
receiving hard and soft material in a conduit;
moving hard and soft material through conduit toward a portion of the conduit that
has a separating apparatus;

5 forcing soft material and a controlled amount of hard material through the separating
apparatus,

wherein the separating apparatus comprises a wall having an interior side and an
exterior side and a plurality of apertures through the wall, each aperture comprising an outer
section and an inner section, the outer section having a first opening and the inner section
10 having a plurality of second openings, wherein the second openings open from the interior
side to the first opening and the first opening opens to the exterior side.

18. The method of claim 17 wherein the hard and soft materials are moved through the
conduit by a rotating auger.

15 19. The method of claim 17 wherein the apparatus is a screen or a sieve.

20. The method of claim 18 wherein the screen is cylindrical in shape and further
comprises two end portions.